SOME ADVENTITIOUS PLANTS IN CONCORD, MASSACHUSETTS

RICHARD J. EATON

WHILE crossing a large sandy field overlooking the Sudbury River in Concord in June, 1934, my attention was attracted by an abundance of a shrubby *Hypericum*, *Pentstemon Digitalis* Nutt., several species of *Artemisia*, and numerous other strange plants too immature to recognize. Repeated visits during the next four months yielded a surprisingly long list of introduced species not previously reported from Concord nor, in some instances, from New England. Two species of *Artemisia* may prove to be new to the Gray's Manual range. The identifications were carefully checked at the Gray Herbarium. Mr. C. A. Weatherby kindly assisted in assigning provisional names to the Artemisias.

In the following annotated list the dates given are those on which were collected the specimens now deposited in the herbarium of the New England Botanical Club. A single asterisk (*) indicates a species not previously reported from Massachusetts, and two (**) not previously reported from New England, in so far as the author can discover. For data concerning "extra-limital" distribution not available in the herbarium of the New England Botanical Club I am indebted to the following institutions: Gray Herbarium, New York Botanical Garden, and the Brooklyn Botanic Garden.

TRIODIA FLAVA (L.) Hitchc. September 20, 1934. Fairly abundant.

DIANTHUS ARMERIA L. Not previously reported from Concord. Scattered specimens observed.

LEPIDIUM CAMPESTRE (L.) R. Br. Abundant in a restricted area.

ARABIS GLABRA (L.) Bernh. Not previously reported in Concord and clearly introduced here. Scarce.

A. DRUMMONDI Gray. The typical pale-flowered form is indigenous on rocky talus in one or two localities in Concord. The present specimens rank and weedy, with prominent purplish flowers, drying to a deep purple. Mr. Milton Hopkins, a monographer of this genus, concurs in the determination but writes that the present plant is a purple-flowered extreme only met in his experience in collections from Texas. Apparently well established.

MELILOTUS OFFICINALIS (L.) Lam. August 19, 1934. Scarce.

**HYPERICUM DENSIFLORUM Pursh. July 18, 1934. A single large plant in profuse flower and fruit. A southern species reaching New Jersey and Long Island.

H. PROLIFICUM L. July 18, 1934. Abundant. Rarely spontaneous in eastern Massachusetts and Connecticut, otherwise absent from New England.

ECHIUM VULGARE L. July 8, 1934. Scarce. Recently collected at one other station in Concord.

VERBENA STRICTA Vent. July 19, 1934. Well established. The third station in eastern Massachusetts. Rarely spontaneous in Connecticut. Otherwise absent from New England.

MONARDA MOLLIS L. July 18, 1934. Abundant. Considered sparingly indigenous in eastern Massachusetts, but doubtless adventive here.

*PYCNANTHEMUM PILOSUM Nutt. August 6, 1934. Well established. Reported from a single Connecticut station. Otherwise absent from New England.

VERNONIA FASCICULATA Michx. September 20, 1934. Scarce but vigorous. A single collection from Medford, Massachusetts, in 1886. Otherwise absent from New England.

EUPATORIUM SEROTINUM Michx. September 9, 1934. Common. Apparently new to New England, except for a single plant collected at a nursery in North Abington, Massachusetts, in 1933 (Gray Herbarium).

GRINDELIA SQUARROSA (Pursh) Dunal. August 6, 1934. Abundant. Specimens seen from seven stations in Maine, Massachusetts, Rhode Island, and Connecticut.

ASTER NOVAE-ANGLIAE L. var. ROSEUS (Desf.) DC. September 20, 1934. Fairly common. Differs from the species in this vicinity in its tolerance of dry soil and in its frequent habit of growing in single stems rather than in clumps.

HELIANTHUS SCABERRIMUS Ell. August 13, 1934. A large patch. Specimens seen from seven scattered stations in Maine, Massachusetts, Rhode Island, and Connecticut.

HELENIUM NUDIFLORUM Nutt. August 6, 1934. Abundant. Occurs sparingly at two other stations in Concord and in three other towns in eastern Massachusetts. Scattered stations elsewhere in New England.

H AUTUMNALE L. September 9, 1934. Rather common. Formerly abundant in a wet meadow near Concord Village. Reported from a single station in Essex County, Massachusetts. Probably indigenous in Berkshire County, Massachusetts, and central and western Connecticut.

ARTEMISIA LUDOVICIANA L. July 8, 1934. Rather scarce. Upper surface of leaves more tomentose than typical material. Reported from a dozen stations in Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut.

**A. MEXICANA Willd. August 11, 1934. Not scarce. Indigenous from Missouri southwestward. Single specimens seen from Franklin Lakes, New Jersey, and from Nashville, Tennessee, otherwise apparently unreported from east of the Mississippi River.

*A. GNAPHALODES Nutt. August 6, 1934. Common. Reported from scattered stations from Quebec and New Brunswick southward to Delaware.

**A. TRIDENTATA Nutt. September 20, 1934. Common. Fruiting plants scarce. Apparently the first report of occurrence east of the Great Plains, and new to Gray's Manual range.

A. ABSINTHIUM L. August 13, 1934. Common. A form with abnormally narrow leaf segments occurs sparingly and was collected on August 6, 1934. Occasional throughout New England.

A. FRIGIDA Willd. July 8, 1934. A single specimen in close bud, but determination probably correct. Reported from Worcester, Massachusetts, in 1918 and from one station in Connecticut, otherwise absent from New England.

CENTAUREA MACULOSA Lam. August 6, 1934. Scarce. Sparingly introduced at scattered stations throughout New England.

In all probability the foregoing list will prove to be an incomplete inventory of the waifs from the West and South which are finding a congenial habitat in Concord. The summer was very dry and much vegetation, particularly the grasses, failed to reach maturity.

Originally a large Indian camp site, more recently under constant cultivation, and for two or three years ending in 1929 rented to Mr. Jelle Roos, the well-known commerical bulb grower, this ten acre tract of light sandy loam overlying a deep bed of sand and gravel has lain fallow for the past five years. The ground was not seeded to grass by Mr. Roos when he quitted his tenancy, nor has the vegetation been mowed or burned since that time according to the owner. One of many gray birch seedlings which have come in was by ring-count 5 years old in 1934.

It is of more than casual interest to find such a concentration of well established immigrants from the West, several of which are distinctly rare in New England. One species in particular—the sage bush of the alkali deserts—is apparently new to New England, if not to the entire country east of the Great Plains. The latter plant certainly betrays no marked ability to establish itself beyond the borders of its natural range, and yet we find it in comparative abundance with occasional fruiting specimens in eastern Massachusetts growing in a supposedly siliceous soil so characteristic of the region.

In all likelihood, the seeds of all these plants were accidentally introduced in sheep manure by the last tenant.[1] Ecological conditions were obviously favorable for germination and subsequent development. Undisturbed by plow, scythe, or fire, they now form a con-

[1] Mr. Roos writes under date of March 1, 1935: "I can explain the collection of Western weeds you found there by the fact that I used an uncleaned sheep manure which I bought from a man who obtained it from woolen mills in Lowell or Lawrence. This sheep manure contained a large percentage of wool combings, in which the weed seeds could plainly be seen when I received it."

spicuous element of the vegetation. Even so, there may be some obscure factor operating at this particular site which is absent from a multitude of other fallow fields where there would appear to be an equally good chance to harbor a similar collection of well established western weeds. Farmers have been using sheep manure from the woolen mills for years. Seeds of *Artemisia tridentata*, for example, must have been scattered far and wide in this manner; and yet here apparently is the first recorded occurrence of this species in eastern North America.

I am not disinclined to suspect that the "obscure factor" may have some connection with the aboriginal tenants of the field. At first sight, this may seem far-fetched, and yet rotted clam shells still exist in sufficient quantities to justify the local name Clam Shell Bluff. Probably of no more than mere coincidence is the fact that with the exception of sporadic specimens of a few of the species, the introduced plants are concentrated on precisely that part of the field where arrow heads formerly were abundant. In other words, they are now growing in the *close* vicinity of the very spots where the Indians erected their wigwams, and practically nowhere else.

Cambridge, Massachusetts

NOTES ON OEDOGONIUM AND BULBOCHAETE IN THE VICINITY OF WOODS HOLE, MASSACHUSETTS[1]

Chin-Chih Jao

(Plate 407)

It was hoped that the writer's paper on *Oedogonium* in the vicinity of Woods Hole, Massachusetts,[2] would be nearly complete for the region. Altogether, including both new and known forms, fifty-one species, varieties and forms were reported. During 1934, from June to August, the writer had an opportunity to continue his investigation of the freshwater algae in this region, with the result of finding some new plants of this genus, or unreported stations for fruiting *Oedogonia*, which were not included in the writer's first paper. These are listed in the first part of this paper. In the course of the studies on *Oedogonium*, a number of well fruited Bulbochaetes were identified. These plants are rather common around Woods Hole, but only a few species

[1] Papers from the Department of Botany and Herbarium of the University of Michigan, No. 505.

[2] Rhodora, Vol. 36, No. 426, P. 197–214, Pl. 286–288, June, 1934.